**Abstract ID** : 306

**Title** : Predicting risk of shipstrike collisions between high-speed vessel and large cetaceans, especially North Atlantic right whales (Eubalaena glacialis), using bioacoustic modeling

**Category** : Conservation

**Student** : Not Applicable

**Preferred Format** : Poster Presentation

**Abstract** : High-speed vessels have become a widespread form of passenger transportation throughout the world, with many transiting important cetacean habitat. The assumed positive correlation between increased risk of striking a whale as a function of increased vessel speed continues to evoke contentious debate. Here we report advances in a model developed to assess risk of shipstrike to a whale by a high-speed vessel operating in an area of the Gulf of Maine inhabited by several cetaceans, including the highly endangered North Atlantic right whale (Eubalana glacialis). In 2001-2002, we developed a predictive model and then used empirical data to test its efficacy. Centered on what a whale can hear of an oncoming vessel, relative speed of the vessel and whale, and key distances between them, our model predicts risk of shipstrike in terms of available reaction time to a whale based on how well it can hear the approaching vessel. Presumably, the longer a whale has to react, the greater its chances of avoiding shipstrike. Acoustical vessel data and resultant modeling demonstrated that the high-speed vessel was relatively quiet, potentially below ambient noise levels until it was within close range (< 5 km), leaving a whale little time in which to execute a successful escape. The vessel's signature increases rapidly in a non-linear form at the threshold of detection, suddenly becoming quite loud and then falling back to ambient noise levels. The vessel is also quieter ahead of its track, suggesting a "bow-null effect". Our findings indicate that this and other similar vessels, in operation around the world, may pose a significant risk as a result of their speed combined with the relatively quiet signature, creating a potentially cryptic and dangerous situation to a whale. Our results suggest that the science and causality of shipstrikes should be more closely examined.